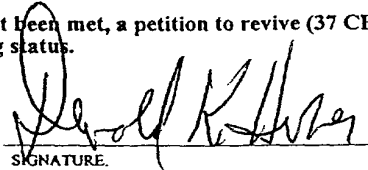


526 Rec'd PCT/PTO 03 AUG 2000

FORM PTO-1390 (REV 11-96)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		ATTORNEY'S DOCKET NUMBER 6525-01WOUS	
<b>TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371</b>					
INTERNATIONAL APPLICATION NO. PCT/IB98/00167		INTERNATIONAL FILING DATE February 11, 1998		U.S. APPLICATION NO. (If known, see 37 CFR 1.5) <b>09/601555</b>	
TITLE OF INVENTION DEVICE FOR PRODUCING CONCRETE BLOCKS					
APPLICANT(S) FOR DO/EO/US Turan Rodoslu and Tugsel Rodoslu					
Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:					
<ol style="list-style-type: none"> <li>1. <input checked="" type="checkbox"/> This is a <b>FIRST</b> submission of items concerning a filing under 35 U.S.C. 371.</li> <li>2. <input type="checkbox"/> This is a <b>SECOND</b> or <b>SUBSEQUENT</b> submission of items concerning a filing under 35 U.S.C. 371.</li> <li>3. <input checked="" type="checkbox"/> This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).</li> <li>4. <input checked="" type="checkbox"/> A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.</li> <li>5. <input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371(c)(2))           <ol style="list-style-type: none"> <li>a. <input type="checkbox"/> is transmitted herewith (required only if not transmitted by the International Bureau).</li> <li>b. <input checked="" type="checkbox"/> has been transmitted by the International Bureau.</li> <li>c. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US).</li> </ol> </li> <li>6. <input type="checkbox"/> A translation of the International Application into English (35 U.S.C. 371(c)(2)).</li> <li>7. <input checked="" type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))           <ol style="list-style-type: none"> <li>a. <input type="checkbox"/> are transmitted herewith (required only if not transmitted by the International Bureau).</li> <li>b. <input type="checkbox"/> have been transmitted by the International Bureau.</li> <li>c. <input type="checkbox"/> have not been made; however, the time limit for making such amendments has NOT expired.</li> <li>d. <input checked="" type="checkbox"/> have not been made and will not be made.</li> </ol> </li> <li>8. <input type="checkbox"/> A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).</li> <li>9. <input type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).</li> <li>10. <input type="checkbox"/> A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).</li> </ol>					
<b>Items 11. to 16. below concern document(s) or information included:</b>					
<ol style="list-style-type: none"> <li>11. <input checked="" type="checkbox"/> An Information Disclosure Statement under 37 CFR 1.97 and 1.98.</li> <li>12. <input type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.</li> <li>13. <input type="checkbox"/> A <b>FIRST</b> preliminary amendment.  <input type="checkbox"/> A <b>SECOND</b> or <b>SUBSEQUENT</b> preliminary amendment.</li> <li>14. <input type="checkbox"/> A substitute specification.</li> <li>15. <input type="checkbox"/> A change of power of attorney and/or address letter.</li> <li>16. <input checked="" type="checkbox"/> Other items or information:            - form PCT/IB/308         </li> </ol>					
<div style="text-align: right;"> <b>"EXPRESS MAIL" MAILING LABEL</b>            NUMBER <u>EL424808107US</u>            DATE OF DEPOSIT <u>August 3, 2000</u>            I HEREBY CERTIFY THAT THIS PAPER OR FEE IS            BEING DEPOSITED WITH THE UNITED STATES POSTAL            SERVICE "EXPRESS MAIL POST OFFICE TO            ADDRESSEE" SERVICE UNDER 37 CFR 1.10 ON THE            DATE INDICATED ABOVE AND IS ADDRESSED TO THE            COMMISSIONER OF PATENTS AND TRADEMARKS,            WASHINGTON, D.C. 20231.  <u>J. R. Holdsworth</u>            (TYPED OR PRINTED NAME OF PERSON MAILING            PAPER OR FEE)  <u>[Signature]</u>            (SIGNATURE OF PERSON MAILING PAPER OR FEE)         </div>					

U.S. APPLICATION NO. <b>09/601555</b> INTERNATIONAL APPLICATION NO. <b>PCT/IB98/00167</b>		ATTORNEY'S DOCKET NUMBER <b>6525-01WOUS</b>	
17. <input checked="" type="checkbox"/> The following fees are submitted: <b>BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) :</b> Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO. .... \$970.00  International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO ..... \$840.00  International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO ..... \$760.00  International preliminary examination fee paid to USPTO (37 CFR 1.482) but all claims did not satisfy provisions of PCT Article 33(1)-(4) ..... \$670.00  International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(1)-(4) ..... \$96.00  <b>ENTER APPROPRIATE BASIC FEE AMOUNT =</b>		<b>CALCULATIONS PTO USE ONLY</b>	
Surcharge of \$130.00 for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(e)).		\$ 840.00	
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE
Total claims	- 20 =		X \$18.00
Independent claims	- 3 =		X \$78.00
MULTIPLE DEPENDENT CLAIM(S) (if applicable)			+ \$260.00
<b>TOTAL OF ABOVE CALCULATIONS =</b>			\$ 840.00
Reduction of 1/2 for filing by small entity, if applicable. A Small Entity Statement must also be filed (Note 37 CFR 1.9, 1.27, 1.28).			\$
<b>SUBTOTAL =</b>			\$ 840.00
Processing fee of \$130.00 for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(f)).			\$
<b>TOTAL NATIONAL FEE =</b>			\$ 840.00
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property			\$
<b>TOTAL FEES ENCLOSED =</b>			\$ 840.00
			Amount to be: refunded
			charged
a. <input checked="" type="checkbox"/> A check in the amount of \$ <u>840.00</u> to cover the above fees is enclosed.  b. <input type="checkbox"/> Please charge my Deposit Account No. _____ in the amount of \$ _____ to cover the above fees. A duplicate copy of this sheet is enclosed.  c. <input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. <u>13-0235</u> . A duplicate copy of this sheet is enclosed.			
NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.			
SEND ALL CORRESPONDENCE TO Donald K. Huber McCormick, Paulding & Huber LLP CityPlace II 185 Asylum Street Hartford, CT 06103-3402			
 SIGNATURE Donald K. Huber NAME 18,686 REGISTRATION NUMBER August 3, 2000			

Applicant or Patentee: Turan Rodoslu and Tugsel Rodoslu  
Serial or Patent No.: not yet assigned Attorney's Docket No.: 6525-01  
Filed or Issued: concurrently herewith  
For: DEVICE FOR PRODUCING CONCRETE BLOCKS

**VERIFIED STATEMENT (DECLARATION) CLAIMING  
SMALL ENTITY STATUS (37 CFR 1.9(f) and 1.27(b))  
- INDEPENDENT INVENTOR**

As a below named inventor, I hereby declare that I qualify as an independent inventor as defined in 37 CFR 1.9(c) for purposes of paying reduced fees under section 41(a) and (b) of Title 35, United States Code, to the Patent and Trademark Office with regard to the invention entitled

DEVICE FOR PRODUCING CONCRETE BLOCKS  
described in

☒ [ x ] the specification filed herewith

☐ [ ] application Serial No. \_\_\_\_\_, filed \_\_\_\_\_

☐ [ ] Patent No. \_\_\_\_\_, issued \_\_\_\_\_

I have not assigned, granted, conveyed or licensed and am under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor under 37 CFR 1.9(c) if that person had made the invention, or to any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or a nonprofit organization under 37 CFR 1.9(e).

Each person, concern or organization to which I have assigned, granted, conveyed or licensed or am under an obligation under contract or law to assign, grant, convey, or license any rights in the invention is listed below:

☐ [ ] no such persons, concern, or organization

☐ [ ] persons, concerns or organizations listed below\*

\*NOTE: Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities (37 CFR 1.27)

FULL NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_  
☐ [ ] INDIVIDUAL ☐ [ ] SMALL BUSINESS CONCERN ☐ [ ] NONPROFIT ORGANIZATION

FULL NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_  
[ ] INDIVIDUAL [ ] SMALL BUSINESS CONCERN [ ] NONPROFIT ORGANIZATION

FULL NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_  
[ ] INDIVIDUAL [ ] SMALL BUSINESS CONCERN [ ] NONPROFIT ORGANIZATION

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))

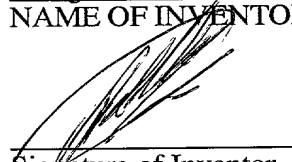
I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

Turan Rodoslu  
NAME OF INVENTOR

  
Signature of Inventor

2-8-2000  
DATE

Tugsel Rodoslu  
NAME OF INVENTOR

  
Signature of Inventor

2-8-2000  
DATE

\_\_\_\_\_  
NAME OF INVENTOR

\_\_\_\_\_  
Signature of Inventor

\_\_\_\_\_  
DATE

PTO/PCT Rec'd 11 SEP 2000

09/60155: #3

I HEREBY CERTIFY THAT THIS CORRESPONDENCE IS BEING DEPOSITED WITH THE UNITED STATES POSTAL SERVICE AS FIRST CLASS MAIL IN AN ENVELOPE ADDRESSED TO: COMMISSIONER OF PATENTS AND TRADEMARKS, WASHINGTON, D.C. 20231, ON THE DATE INDICATED BELOW.

SIGNATURE OF PERSON MAILING PAPER

September 8, 2000  
DATE OF SIGNATURE

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In the Application of )

Turan Rodoslu and Tugsel Rodoslu )

for DEVICE FOR PRODUCING CONCRETE )  
BLOCKS )

Serial No: 09/601,555 )

Our Docket No: 6525-01WOUS

Filed: August 3, 2000 )

Hartford, Connecticut, September 8, 2000

**Box PCT**

Hon. Assistant Secretary and  
Commissioner of Patents and Trademarks  
Washington, D. C. 20231

**PRELIMINARY AMENDMENT**

S I R:

Please amend this application as follows:

In the Title

At all occurrences, please amend the title to conform it to the title of the  
International Application as published under WO 99/41052, as follows:

--DEVICE FOR PRODUCING CONCRETE BLOCKS--

In the Specification

Page 1, line 1, delete the heading "Specification".

Page 1, line 5, delete the sub-heading "Technical field" and substitute

--FIELD OF THE INVENTION--.

Page 1, line 20, delete the sub-heading "Prior art" and substitute

--BACKGROUND OF THE INVENTION--.

Page 3, line 11, delete the sub-heading "Representation ...advantages" and substitute --SUMMARY OF THE INVENTION--.

Page 8, line 15, delete the sub-heading "Short ...drawings" and substitute --BRIEF DESCRIPTION OF THE DRAWINGS--

Page 9, line 8, delete the sub-heading "Best ... invention" and substitute --DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT--.

Pages 18 and 19, please delete these pages.

### In the Claims

Claim 3 - line 1, delete "or 2".

Claim 4 - line 1, delete "any of the preceding claims" and substitute --claim 1--.

Claim 5 - line 1, delete "any of the preceding claims" and substitute --claim 1--.

Claim 6 - line 1, delete "any of the preceding claims" and substitute --claim 1--.

Claim 8 - line 1, delete "or 7".

Claim 9 - line 1, delete "any of the claims 6 to 8" and substitute --claim 6--.

Claim 11 - line 1, delete "any of the preceding claims" and substitute --claim 1--.

Claim 13 - line 1, delete "any of the preceding claims" and substitute --claim 1--.

Claim 15 - line 1, delete "any of the preceding claims" and substitute --claim 1--.

Claim 17 - line 1, delete "or 16".

Claim 18 - line 1, delete "one of the claims 15 to 17" and substitute --claim 15--.

Claim 20 - line 1, delete "at least one of the claims 15 to 19-- and substitute --claim 15--.

Claim 23 - line 1, delete "or 22".

Claim 24 - line 1, delete "one of the claims 21 to 23" and substitute --claim 21--.

Claim 25 - line 1, delete "one of the claims 21 to 24" and substitute --claim 21--.

Claim 26 - line 1, delete "one of the claims 21 to 25" and substitute --claim 21--.

Claim 27 - line 1, delete "one of the claims 21 to 26" and substitute --claim 21--.

Claim 28 - line 1, delete "one of the claims 21 to 26" and substitute --claim 21--.

In the Abstract

Delete the last line "(Figur 5)".

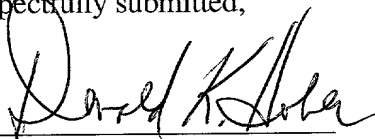
REMARKS

The above amendments are requested to put the application into U.S. format and to delete multiple dependencies in the claims.

Any fee required by the filing of this amendment may be charged to our Deposit Account No. 13-0235.

Respectfully submitted,

By



Donald K. Huber

Registration No. 18,686

Attorney for Applicants

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Hartford, Connecticut 06103-4102  
(860) 549-5290

## Specification

Device for fabricating concrete stones

### Technical field

The invention relates to a device for fabricating concrete stones, especially kerbstones, paving stones and/or cast stones with two longitudinal sides at least partially bare at placing, which can be seen from a traffic route, especially for delimiting and/or marking traffic routes, whereby the device comprises a vibrating device for compacting a raw material mass in a mould, according to the preamble of claim 1. The invention furthermore relates to a method for fabricating concrete stones, especially kerbstones, paving stones and/or cast stones with two longitudinal sides at least partially bare at placing, which can be seen from a traffic route, especially for delimiting and/or marking traffic routes, whereby the method comprises a vibrating device for compacting a raw material mass in a mould, according to the preamble of claim 20.

### Prior art

The increasing traffic volume makes road planning and road delimitation more and more important. For example, it is necessary to divide a roadway into two parts for different directions of traffic or to separate the pedestrian area from the vehicle area. Usually, a kerbstone or edge stone, hereunder designated as a kerbstone, is used to this purpose.

The basic purpose of the kerbstone is to protect pedestrians from vehicles, such as for example cars. Therefore, it is necessary that the kerbstone is good visible for vehicle drivers at daytime as well as in the night. For example, light colours such as white or yellow have this effect.



Kerbstones are usually produced of Portland cement, sand and aggregates. Correspondingly, the colour of these kerbstones is in the range between light grey and dark grey. The kerbstone is sometimes painted after its fabrication in order to make it good visible. However, this has the disadvantage that the colour is applied only on the surface and that thus it is easily and quickly removed by chemical and mechanical ecological influences. The kerbstone is after a short time plain grey again. Often, the paint is renewed again and again in springtime, however it mostly does not once resist on the kerbstone over the following summer.

A few kerbstone manufacturers use a concrete coloured with pigments for producing a coloured kerbstone. However, this proved to be not satisfactory and uneconomical because the faces of the kerbstone which are visible after placing are very small with respect to the whole surface.

On the other hand, white cement must be used for a corresponding colouring with pigment to obtain light colours such as, for example white or yellow. However, white cement is much more expensive than Portland cement. Furthermore, white cement leads to a little resistant, less stable kerbstone than it is the case for Portland cement.

From WO 94/03680, it is known, for example, to incorporate additional reflectors into the kerbstone. However, this is expensive since correspondingly adapted recesses must be created in the kerbstone and additional parts, namely the reflectors, must be made available for the fabrication and incorporated. For example, if the reflectors break out once due to mechanical force influence, the optical effect is completely lost.

For the fabrication of concrete stones, it is necessary to compact a raw material mass constituting the concrete stone by vibrating, i.e. by supplying vibration energy. For traditional concrete stone machines, such as known for example from DE-OS 27 37 186, there results however the pro-

blem that a base body with a base plate or in certain cases even the whole machine frame is set vibrating. This vibration energy is however lacking to compact the raw material mass of the concrete stone to be produced so that this causes an increased power loss so that the vibrating device must be dimensioned correspondingly bigger in order to introduce enough vibration energy into the raw material mass. Furthermore, the additional vibrations of the machine result in reduced maintenance intervals, increased stop periods and increased misfunctions and damages, for example because of the loosening of the screwed connections due to vibration.

#### Representation of the invention, aim, solution, advantages

Therefore, the aim of the invention is to indicate a method and a device of the above mentioned type, whereby the aforesaid disadvantages are overcome and a perfect concrete stone with respect to compacting and shaping can be fabricated with a reduced expenditure of energy.

This aim is achieved with a device of the above mentioned type by the characteristics indicated in claim 1 and with a method of the above mentioned type with the steps indicated in claim 21.

For this purpose, it is provided for a device according to the invention that the vibration device shows at least one vibration transfer element which grasps through at least one opening in the mould and strikes against a diaphragm covering the raw material mass in the mould on at least one side.

This has the advantage that vibration energy for compacting the raw material mass is directly transferred into the raw material mass without additionally loading other parts of the device with vibration energy. Thus, the vibration device can be dimensioned much smaller, since only very little to no vibrating energy is introduced into other parts than the raw material

mass and so there are little losses with respect to the vibration energy. Therefore, there results the corresponding reduction of the energy consumption when fabricating concrete stones.

Advantageous improvements of the device are indicated in claims 2 to 10.

So, a homogeneous and uniform transfer of vibration energy into the raw material mass is obtained by the fact that openings are provided in the mould in gravity direction above and below and correspondingly above and below respectively at least one vibration transfer element grasps through a respective opening, the raw material mass in the mould being locked above and below by respectively one diaphragm against which corresponding vibration transfer elements strike above and below.

In an appropriate way, the vibration transfer element is at least one rod and the diaphragm preferable a metal plate, whereby especially the diaphragm is configured corresponding to a desired shape of the concrete stone to be fabricated.

A vibration insulation between the vibrations produced by the vibrating device and the device itself is achieved by the fact that the vibrating device comprises a frame in which a vibrating element is positioned elastically, the vibration transfer element being mechanically coupled with the vibrating element.

Appropriately, the vibrating element is a weight rotatable off-center on an axle.

In a preferred embodiment, the elastic bearing comprises several, especially six, springs and/or elastic plastic blocks which are placed between the frame and the vibrating element for bearing the vibrating element in the frame.

For the vibration decoupling between the vibrating device and the device and/or the mould, the frame of the vibrating device is elastically supported on the mould and/or the device.

In a preferred embodiment, the elastic bearing comprises at least one spring and/or at least one elastic plastic block, which is placed between the frame and a machine frame of the device/or the mould.

The vibrating device is configured movable relative to the mould for the optional coupling of the vibrating device over the vibration transfer element to a corresponding diaphragm during a machine cycle in which a compacting of the raw material mass has to take place by vibrating.

For the optional corresponding lifting or lowering of the vibrating device with respect to the mould, a rod is advantageously placed on a frame of the vibrating device.

For the further vibration decoupling, roller bearings are provided at least in the area of the vibrating device, roller bearings on which the mould rests, whereby they are connected elastically positioned with the device.

In a preferred embodiment, the roller bearings comprise a cylindrical body which shows a cylindrical recess on one side opposite the mould in which a spring is placed which rests on a machine frame of the device, whereby furthermore an incision with a rectangular cross-section is configured on one side of the cylindrical body turned to the mould, incision in which a roller which carries the mould is placed rotatable and rising above the cylinder.

Moreover, the device is advantageously characterized by the following stations :

a first station which supplies base plates from a base plate stack the one after the other,  
 a second station which applies a first natural uncoloured material, especially concrete, on the base plate,  
 a third station which applies a second coloured material, especially concrete, onto the base plate with the first material and  
 a fourth station which pressurizes and/or vibrates the applied first and second material for forming a kerbstone.

In a particularly advantageous manner, a fifth station is additionally provided for in which finished kerbstones are stacked on a wagon.

Advantageously, the stations are placed in a row and each supplying operation of the first station automatically conveys the base plates which are respectively in the following stations one station further. This has the advantage of an automatized fabrication.

In a particularly simple and low-cost embodiment, the base plates form a bottom as part of the mould, whereby the vibrating device shows eventually for a vibrating device placed below the base plates at least one opening for leading through at least one vibration transfer element.

For a method of the above mentioned type, the following steps are provided for according to the invention :

- (a) Placement of a moulding box on a base plate with a first funnel-shaped filling element,
- (b) Filling of a first raw material mass into the moulding box,
- (c) Removal of the first funnel-shaped filling element and placement of a second funnel-shaped filling element, the filling cross-section of which is bigger than that of the first funnel-shaped filling element,
- (d) Filling of a second raw material mass into the moulding box,

- (e) Placement of a diaphragm into the moulding box on the second raw material mass,
- (f) Loading of the diaphragm with vibration energy.

This has the advantage that the raw material mass is directly loaded with vibration energy so that an optimal compacting is also obtained in critical areas, whereby by avoiding power losses through covibrating of other machine parts an optimal assembly and a homogeneous structure is obtained for a low expenditure of energy. Furthermore, there results the advantage that the essential part of the concrete stone which, for example, cannot be seen after placing thereof, is produced, for example, of low-cost Portland cement in form of the first raw material mass, while the sides of the concrete stone which can be seen are formed by a layer of coloured material with a predetermined thickness (second raw material mass). Thus, the expensive material such as, for example white concrete, is required in less quantity.

Further advantageous embodiments of the method are characterized in the claims 22 to 28.

A loading of the raw material masses in the moulding box from two sides with a correspondingly uniform vibration energy supply is obtained by the following additional step after step (a) : (a1) placement of a diaphragm in the moulding box on the base plate, this diaphragm being also loaded with vibration energy in step (f).

For the corresponding shaping of the raw material mass for fabricating a concrete stone with a predetermined shape, a moulding part or moulding punch is placed on the diaphragm in an additional step (e1) after step (e).

For fabricating concrete stones with at least one, especially two coloured sides, the second raw material mass is advantageously placed in step (d)

on the first raw material mass and on at least one side between the first raw material mass and a wall of the moulding box.

Advantageously, the first raw material mass is made of a mixture of the constituents Portland cement, water and aggregate, especially sand which are mixed together in a particularly advantageous manner in the ratio 120 : 37 : 180. This results in a resistant kerbstone by low production costs.

Advantageously, the second raw material mass is made of a mixture of the constituents white cement, pigment, water and aggregate, especially sand, which are mixed together in a particularly advantageous manner in the ratio 23 : 1,15 : 9,5 ; 35. This results in a permanent colouring effect at low production costs.

### **Short description of the drawings**

The invention will be explained in more detail below with reference to the attached drawings.

Fig. 1 shows a perspective view of a kerbstone fabricated according to the invention.

Fig. 2 is a schematic view of a preferred embodiment of a device according to the invention for fabricating a kerbstone.

Fig. 3 is a side view of a preferred embodiment of a vibrating device according to the invention.

Fig. 4 is a sectional view of the vibrating device of fig. 3 in direction of the line A-A.

Fig. 5 is a sectional view of a vibrating station of a device according to the invention which is equipped with a vibrating device according to the fig. 3 and 4.

Fig. 6 is a sectional view of a roller bearing in the area of a vibrating station of a device according to the invention.

### **Best way for carrying out the invention**

The preferred embodiment of a vibrating device 200 represented in fig. 3 and 4 for a device according to the invention for fabricating concrete stones comprises a frame 40 with supports 42 in which vibrating elements 44 are respectively elastically supported by springs 46. A vibration transfer element 48 is fixed on the vibrating element 44, this vibration transfer element projecting downwards over the frame 40. Springs 50 on which the frame 40 rests on a machine frame or a mould are also placed on this side of the frame. These springs 50 are configured in such a way that as little vibration as possible is transferred from the frame 40 to the machine frame or to the mould.

The vibrating element 44 is, for example, set vibrating by a weight rotating off-center on a shaft so that vibration energy is transferred to the vibration transfer element 48. The gear for the vibrating element 44 is not represented and is preferably placed besides the vibrating element 44 on the frame 40 or on the support 42, for example as an electric or a hydraulic motor, and drives the vibrating element 44 for example over a belt drive which is not represented. In the present embodiment, two gears are provided for on each vibrating device 200. The vibration transfer element 48 transfers the vibration energy correspondingly in the manner explained below with reference to fig. 5.



Fig. 5 shows a section through a vibrating section of a device according to the invention. A first raw material mass 54 constituting a core 14 is placed in a moulding box 52 which is closed on a lower side by a base plate 22. A second raw material mass 56 is placed in the moulding box 52 on the first raw material mass 54 and laterally between the first raw material mass 54 and a wall of the moulding box. The second moulding material is provided with corresponding colouring agents and forms a coloured edge area 16 when fabricating the concrete stone. A moulding punch 58 which forces a predetermined shape on the raw material mass 54, 56 is above in the moulding box 52. The moulding box 52, the moulding punch 58 and the base plate 22 as a bottom form together a mould for fabricating a concrete stone.

A diaphragm 60, for example in form of a metal plate, is placed respectively above and below the raw material mass 54, 56, whereby they enclose the raw material mass 54, 56 therebetween. Above the mould shows in the mould punch 48 an opening 62 and below in the base plate 22 an opening 64. As soon as the base plate 23 reaches the represented vibrating station, a vibrating device 200 comes nearer respectively from above and from below in such a way that respective vibration transfer elements 48 of the vibrating devices 200 grasp respectively through the openings 62 and 64 and strike respectively against a diaphragm 60. The vibration energy generated by the vibrating element 44 is thus directly transferred through the openings 62 and 64 onto the diaphragms 60 and thus directly to the raw material mass 54, 56. Other machine parts such as the moulding box 52, the mould punch 58 or the base plate 22 are not directly set vibrating through the vibrating device 200. The elastic bearings in form of springs 46 in the supports 42 and in form of the springs 50 ensure this (fig. 3).

In a device according to the invention, the base and supporting plates 23 are moved on a movement path of a station to the next one, the base pla-

tes 22 gliding on special roller bearings. An example for an embodiment of such a roller bearing 66 is represented in fig. 6. The roller bearing 66 comprises a cylindrical body 68 which shows a cylindrical recess 70 on its lower side into which a spring 72 is embedded. This spring is fixed on a machine frame. An incision 74 with a rectangular cross-section is built-in into the cylinder 68 on its upper side, incision in which is a roller 76 which is positioned on a rotation axis 78 placed transversely to the incision. The roller rises a little above the body 68 so that the base plates 22 can glide on the rollers 76. Thus, as far as vibrations are transferred from the raw material mass 54, 56 which is loaded with vibration energy to the base plate 22, these vibrations are absorbed by the springs 72 so that on the whole there does not take place any vibration transfer to a machine frame of the device according to the invention.

On each movement of base plate 22, in a first station, a first filling funnel is placed onto the moulding box, funnel into uncoloured material in form of the first raw material mass 54 is filled. When the base plate 22 has reached a second station, coloured material in form of the second raw material mass 56 is filled-in in such a way that it is placed in the manner represented in fig. 5. When reaching a third station, the filling funnel is removed so that there remains the fixed moulding box. A lower diaphragm 60 has been placed inside the fixed moulding box 52 before filling the mixture 54, 56. Now, an upper diaphragm 60 is also placed from above in the third station. The above explained vibration units are now applied from above and from below, units which set vibrating from above and from below only the concrete body 54, 56 which is placed between the diaphragms. The material 54, 56 is optimally compacted by this vibration.

An essential aspect of the invention consists in the fact that in the area of the third station the base body 22 is positioned on the springs 72 of the roller bearings 66 which are adjustable so that a transfer of the vibration to the whole machine body is avoided. Here, according to a preferred embodi-

diment, 8 spring elements 72 and/or 70 and/or 46 are provided for. An essential advantage of the new invention consists in the fact that the material 54, 56 is also optimally compacted in the critical areas and that an optimal homogeneous assembly is produced with a low expenditure of energy.

Thus, the base plates 22 run through 4 stations. In the first station, the first filling funnel is placed-on and the uncoloured material 54 is filled-in. Then, the filling funnel is exchanged and a bigger second filling funnel is placed-on so that the uncoloured material 54 is covered with coloured material 56 in an appropriate way. For example, the coloured material 56 is filled on the upper side and on a side face, as represented in fig. 5. Then, in a third station the filling funnel is removed so that the concrete block is encompassed only by the moulding box 52. A metal plate 60 designated as a diaphragm, is placed on the lower side, i.e. on the supporting plate 22. A further diaphragm 60 is set from above onto the concrete body 54, 56 so that the concrete body 54, 56 is between the diaphragms 60 from above and from below and is laterally bordered by the moulding box 52.

Here starts the particular effect of the invention. For such production lines for concrete stones, the main problem consists in the fact that the compacting of the material must be carried out at this position. According to the prior art, for this purpose either the whole machine frame is set vibrating, or at least a big part of the machine. According to the invention, in the present case however, only one vibration is applied onto both diaphragms 60 so that the concrete body 54, 56 which is between both diaphragms 60 is compacted without further parts having to covibrate. For this purpose, the vibrating device 200 represented in fig. 3 and 4 is brought nearer onto the diaphragm 60 from above and to the diaphragm 60 from below. A rod 80 serves for this purpose on which the vibrating device 200 is held and moved.

For the vibrating device 200 which is brought nearer from below, the vibration transfer element 48 is prolonged so that it is extended through the machine frame and the base plate 22 and that it loads the diaphragm 60 situated below with vibration energy.

A further point of the invention then consists in the fact that the base frame 40 of the vibrating device 200 rests on the upper side on the diaphragm and on the lower side on the machine frame over the two springs 50 represented in fig. 3 in order not to transfer vibrations itself. Moreover, the springs 72 which carry the roller elements 66 preferably are adjustable with respect to their distance and their spring constant so that they carry the base plate 22 and transmit vibrations to the machine frame in an only very limited extent.

Figur 1 represents a preferred embodiment 100 of a kerbstone in a perspective view. A core 14 constitutes a base element of the kerbstone 100. This core 14 constitutes the main volume of the kerbstone 100 and is made of a low-cost and resistant material such as, for example, Portland cement with the usual aggregates.

If the kerbstone is used in its predetermined position on the roadside, to obtain a firm immovable support of the kerbstone, its biggest part is below the surface in a way similar to an iceberg. This means, substantially only small parts of the kerbstone, namely the surfaces 10 and 12, can be seen. Here, it is obvious that the front face 12 also does not project completely from the ground.

Precisely these sides 10 and 12 are constituted by an edge area 16 relatively thin with respect to the overall dimensions of the kerbstone 100. This edge area 16 is made of a coloured material, especially concrete, such as for example white cement with pigments and is produced in one piece together with the core 14.

Thus, the relatively expensive material is limited to a small volume area of the kerbstone 100, namely the area 16 where the colour configuration due to the white cement with the pigments is important. This means a lower material consumption of the expensive material and thus lower production costs for the kerbstone.

Furthermore, it results from figure 1 that due to the predetermined thickness of the edge area 16, the colour effect is maintained even if small areas or pieces of the sides 10, 12 are detached. The colour effect is thus maintained up to a certain degree of surface damage without retouch work, such as new application of a colour paint, being necessary.

Because of the hard core 14, the kerbstone 100 is stable and thus has a longer lifetime than traditional kerbstones according to the prior art.

Figur 2 shows a preferred embodiment of a device according to the invention for fabricating concrete stones. The main area of this device has three stations : a station 26 for supplying traditional uncoloured concrete onto a base plate 22 ; a station 28 for supplying coloured concrete onto the base plate 22, whereby this concrete is distributed on and besides the uncoloured concrete (compare fig. 5) ; and a station 30 which gives the definitive form to the concrete stone by pressurizing and vibrating with the above described vibrating device. In the station 26, advantageously the uncoloured concrete is preformed during the vibration.

At the beginning of the device, a station 20 is provided for the supplying of base plates 22 from a base plate stack 24. This mechanical force simultaneously transports the base plates 22 which are at the other stations respectively one station further.

In this way, a procedure step is carried out automatized parallel in each cycle, and in each cycle, i.e. by each supply action of the station 20, a finished kerbstone is thrown out. A cycle lasts for example approximately 15 to 20 seconds.

At the end of the device, a wagon 34 picks up green or raw kerbstones the one after the other. These stones then encompass a core 14 made of an uncoloured material and an edge area 16 made of coloured material (figure 1). The edge or concrete stone is thus not covered by a thin colour layer but is produced itself of coloured material in a predetermined section.

Approximately only 15% of the kerbstone consists of coloured concrete so that the production costs are not substantially higher than for a traditional kerbstone which is only painted with colour. This results from the following calculation of the costs.

The raw material for a kerbstone is

Aggregate sand	38 kg
Cement	25 kg
Pigment	5% of cement

The prices for these materials are

Aggregate	0,01 USD/kg
Portland cement	0,05 USD/kg
White cement	0,11 USD/kg
Pigment	1,32 USD/kg

With these values, the material costs for different kerbstone types can be calculated.

#### Type 1

Known kerbstone made of normal concrete.

Aggregates	$38 \text{ kg} \times 0,01 = 0,38 \text{ USD/kerbstone}$
Portland cement	$25 \text{ kg} \times 0,05 = 1,25 \text{ USD/kerbstone}$
Total	1,63 USD/kerbstone

#### Type 2

Coloured kerbstone made of white cement and pigments.

Aggregates	$38 \text{ kg} \times 0,01 = 0,38 \text{ USD/kerbstone}$
White cement	$25 \text{ kg} \times 0,11 = 2,75 \text{ USD/kerbstone}$
Pigment	$1,25 \text{ kg} \times 1,32 = 1,65 \text{ USD/kerbstone}$
Total	4,78 USD/kerbstone

#### Type 3

Coloured kerbstone according to the present invention

Aggregates	$38 \text{ kg} \times 0,01 = 0,38 \text{ USD/Kerbstone}$
Portland cement (85%)	$21 \text{ kg} \times 0,05 = 1,05 \text{ USD/kerbstone}$
White cement (15%)	$25 \text{ kg} \times 0,11 = 2,75 \text{ USD/kerbstone}$
Pigment (4x0,05)	$0,2 \text{ kg} \times 1,32 = 0,26 \text{ USD/kerbstone}$
Total	2,13 USD/kerbstone

It results herefrom that the traditional coloured kerbstone (type 2) is more expensive by the factor 2,24 than the kerbstone according to the invention (type 3).

In fact, the material costs for a kerbstone according to the present invention are higher by the factor 1,31 than the material costs for an uncoloured kerbstone (type 2) ; however, there result further cost saving of approximately 31% because of the automatized production.

Due to the vibrating device 200 configured according to the invention, a further energy saving is achieved, as it results from the following examination of a series of tests.

A known machine of the type Zenith 844 had a capacity of 180 pieces per hour and consumed 19 kW. There results herefrom a power requirement of  $19\,000\text{ Watt} / 180 = 105\text{ Watt}$  per concrete stone.

A device according to the invention has a capacity of 300 pieces per hour and consumes 10,6 kW. This results in a power requirement of  $10\,600\text{ Watt} / 300 = 35\text{ Watt}$  per concrete stone. This results in a factor of  $105/35=3$  with respect to the power requirement or a power saving of  $(105-35) / 105 = 66\%$ .

As a result, we obtain a resistant kerbstone 100 with permanent colour configuration by low production costs.

It results informally from the preceding description that there are many amendments, improvements and modifications which do not deviate from the extent of the present invention.



## LIST OF REFERENCE NUMERALS

100	Kerbstone
200	Vibrating device
10,12	Longitudinal sides which can be seen from the traffic route
14	Core
16	Edge area
20	First station
22	Base plates
24	Base plate stack
26	Second station
28	Third station
30	Fourth station
32	Fifth station
34	Wagon
40	Frame
42	Supports
44	Vibrating elements
46	Springs
48	Vibration transfer element
50	Springs
52	Moulding box
54	First raw material mass
56	Second raw material mass
58	Moulding punch
60	Diaphragm
62	Opening
64	Opening
66	Roller bearing
68	Cylindrical body
70	Cylindrical recess

- 72 Spring
- 74 Incision with rectangular cross-section
- 76 Roller
- 78 Rotational axis
- 80 Rod

### Claims

1. A device for fabricating concrete stones (100), especially kerbstones, paving stones and/or cast stones with two longitudinal sides (10, 12) at least partially bare at placing, which can be seen from a traffic route, especially for delimiting and/or marking traffic routes, whereby the device comprises a vibrating device for compacting a raw material mass (54, 56) in a mould, characterized in that the vibration device (200) shows at least one vibration transfer element (48) which grasps through at least one opening (62, 64) in the mould (22, 52, 58) and strikes against a diaphragm (60) covering the raw material mass (54, 56) in the mould (22, 52, 56) on at least one side.
2. A device according to claim 1, characterized in that openings (62, 64) are provided in the mould (22, 52, 58) in gravity direction above and below and respectively at least one vibration transfer element (48) correspondingly above and below grasps through a respective opening (62, 64), the raw material mass (54, 56) in the mould (22, 52, 58) being locked in gravity direction above and below by respectively one diaphragm (60) against which corresponding vibration transfer elements (48) strike above and below.
3. A device according to claim 1 or 2, characterized in that the vibration transfer element (48) is at least one rod.
4. A device according to any of the preceding claims, characterized in that the diaphragm (60) is a metal plate.

5. A device according to any of the preceding claims,  
characterized in  
that the diaphragm (60) is configured corresponding to a desired shape of  
the concrete stone (100) to be fabricated.
6. A device according to any of the preceding claims,  
characterized in  
that the vibrating device (200) comprises a frame (40, 42) in which a vibra-  
ting element (44) is elastically positioned, the vibration transfer element  
(48) being mechanically coupled with the vibrating element (44).
7. A device according to claim 6,  
characterized in  
that the vibrating element (44) shows a weight rotatable off-center on an  
axle.
8. A device according to claim 6 or 7,  
characterized in  
that the elastic bearing comprises several, especially six, springs (46)  
and/or elastic plastic blocks which are placed between the frame (42) and  
the vibrating element (44) for the bearing of the latter in the frame (42).
9. A device according to any of the claims 6 to 8,  
characterized in  
that the frame (40) of the vibrating device (200) is elastically supported on  
the mould (22, 52, 58) and/or the device.
10. A device according to claim 9,  
characterized in  
that the elastic bearing comprises at least one spring (50) and/or at least  
one elastic plastic block which is (are) placed between the frame (40) and  
a machine frame of the device and/or the mould (22, 52, 58).

11. A device according to any of the preceding claims,  
characterized in  
that the vibrating device (200) is configured movable relative to the mould  
(22, 52, 58).
12. A device according to claim 11,  
characterized in  
that a rod (80) is placed on a frame (40) of the vibrating device.
13. A device according to any of the preceding claims,  
characterized in  
that at least in the area of the vibrating device (200) roller bearings (66)  
are provided for on which the mould (22, 52, 58) rests, the roller bearings  
(66) being connected elastically positioned with the device.
14. A device according to claim 13,  
characterized in  
that the roller bearings (66) comprise a cylindrical body (68) which shows  
a cylindrical recess (70) on one side opposite the mould (22, 52, 58) in  
which a spring (72) is placed which rests on a machine frame of the de-  
vice, whereby furthermore an incision (74) with a rectangular cross-section  
is configured on one side of the cylindrical body (68) turned to the mould  
(22, 52, 58), incision in which a roller (76) which carries the mould (22, 52,  
58) is placed projecting over the cylinder.
15. A device according to any of the preceding claims,  
characterized by  
a first station (20) which supplies base plates (22) from a base plate stack  
(22) the one after the other,

a second station (26) which applies a first natural uncoloured material, especially concrete, wet concrete or dry concrete, on the base plate (22),  
 a third station (28) which applies a second coloured material, especially concrete, or a plastic material or a light reflecting material onto the base plate (22) with the first material and  
 a fourth station (30) which pressurizes and/or vibrates the applied first and second material for forming a kerbstone (100).

16. A device according to claim 15,  
 characterized in  
 that a fifth station (32) is provided for in which green untreated concrete stones (100) are stacked on a wagon (34).
17. A device according to claim 15 or 16,  
 characterized in  
 that the stations (24, 26, 28, 30, 32) are placed in a row and each supplying station of the first station (20) automatically conveys the base plates (22) which are respectively in the following stations one station further.
18. A device according to one of the claims 15 to 17,  
 characterized in  
 that the base plates (22) form a bottom as a part of the mould (22, 52, 58).
19. A device according to claim 18,  
 characterized in  
 that the base plates (22) show at least one opening (64) for leading through at least one vibration transfer element (48).
20. A device according to at least one of the claims 15 to 19,  
 characterized in  
 that the stations (24, 26, 28, 30, 32) are manually or automatically operated, especially computer controlled.

21. A method for fabricating concrete stones, especially kerbstones, paving stones and/or cast stones with two longitudinal sides at least partially bare at placing, which can be seen from a traffic route, especially for delimiting and/or marking traffic routes, whereby the device comprises a vibrating device for compacting a raw material mass in a mould, characterized by the following steps,
- a) Placement of a moulding box on a base plate with a first funnel-shaped filling element,
  - b) Filling of a first raw material mass into the moulding box,
  - c) Removal of the first funnel-shaped filling element and placement of a second funnel-shaped filling element, the filling cross-section of which is bigger than that of the first funnel-shaped filling element,
  - d) Filling of a second raw material mass into the moulding box,
  - e) Placement of a diaphragm into the moulding box on the second raw material mass,
  - f) Loading of the diaphragm with vibration energy.
22. A method according to claim 21, characterized by the following additional step after step (a),
- (a1) Placement of a diaphragm in the moulding box on the base plate whereby in step (f) this diaphragm is also loaded with vibration energy.
23. A method according to claim 21 or 22, characterized by the following additional step after step (e),
- (e1) Placement of a moulding part or a moulding punch on the diaphragm.
24. A method according to one of the claims 21 to 23, characterized in that in step (d) the second raw material mass is placed on the first raw material mass and on at least one side between the first raw material mass and a wall of the moulding box.

25. A method according to one of the claims 21 to 24,  
characterized in  
that the first raw material mass is fabricated of a mixture of Portland cement, water and aggregate, especially sand.
26. A method according to one of the claims 21 to 25,  
characterized in  
that the mixture of the first raw material mass is fabricated of the constituents Portland cement, water and aggregate in the ratio 120 : 37 : 180 or in any other appropriate ratio.
27. A method according to one of the claims 21 to 26,  
characterized in  
that the second raw material mass is fabricated of a mixture of white cement, water, pigment and aggregate, especially sand.
28. A method according to one of the claims 21 to 26,  
characterized in  
that the mixture of the second raw material mass is fabricated of the constituents white cement, pigment, water and aggregate in the ratio 23 : 1,15 : 9,5 : 35 or any other appropriate ratio.



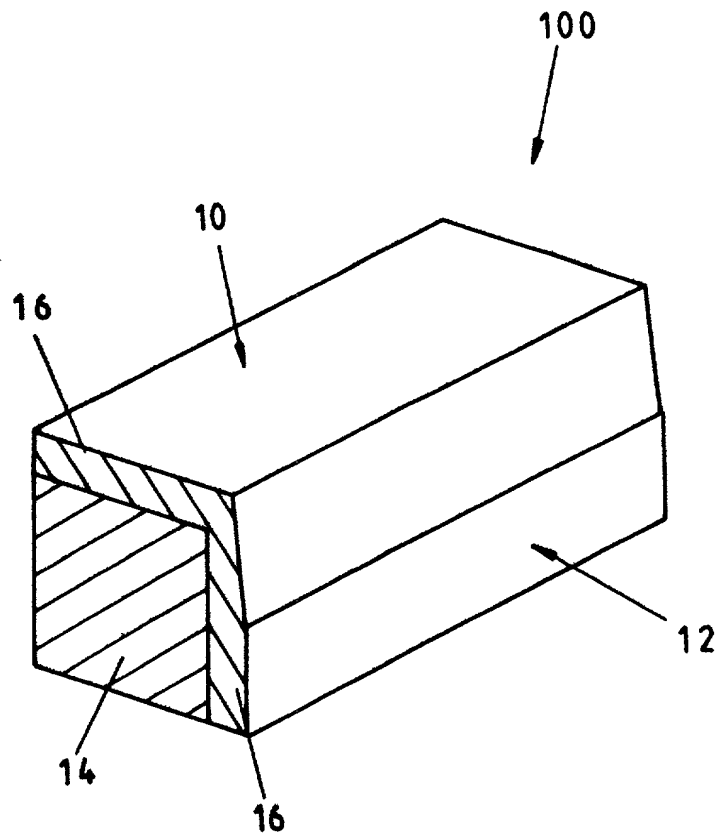
### **Abstract**

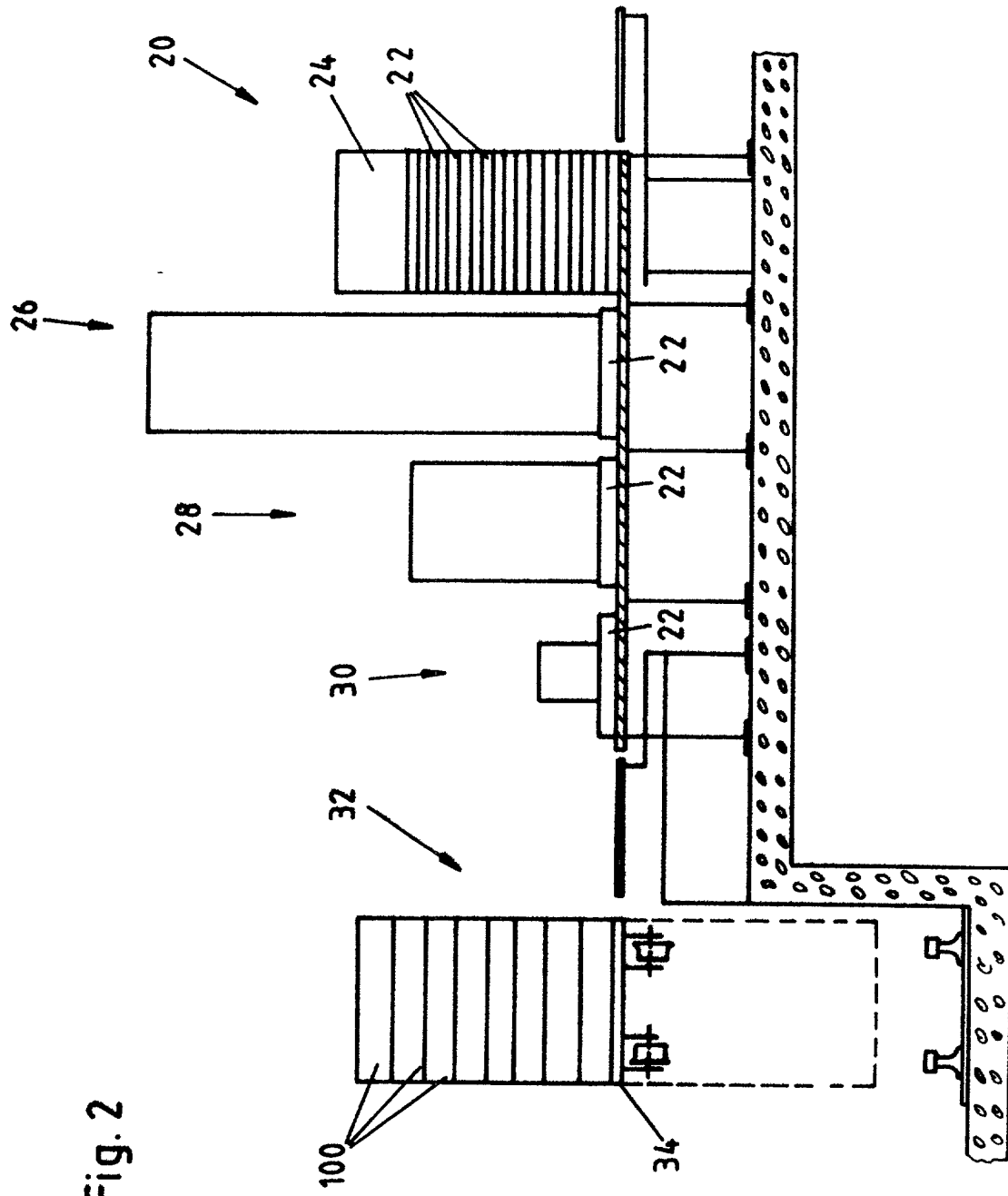
This invention relates to a device for fabricating concrete stones (100), especially kerbstones, paving stones and/or cast stones with two longitudinal sides (10, 12) at least partially bare at placing, which can be seen from a traffic route, especially for delimiting and/or marking traffic routes, whereby the device comprises a vibrating device for compacting a raw material mass (54, 56) in a mould. The vibrating device (200) shows at least one vibration transfer element (48) which grasps through at least one opening (62, 64) in the mould (22, 52, 58) and strikes against a diaphragm (50) covering the raw material mass (54, 56) in the mould (22, 52, 58) on at least one side.

(Figur 5)

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Fig.1





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Fig. 3

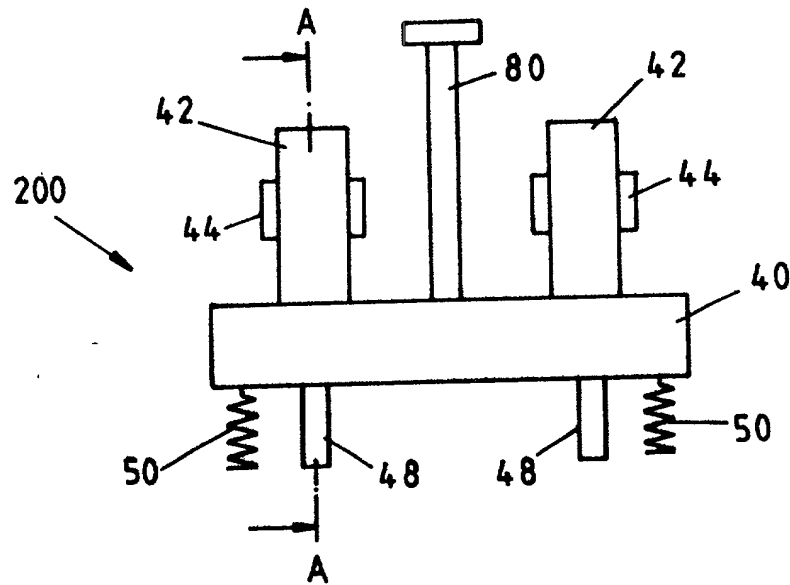


Fig. 4

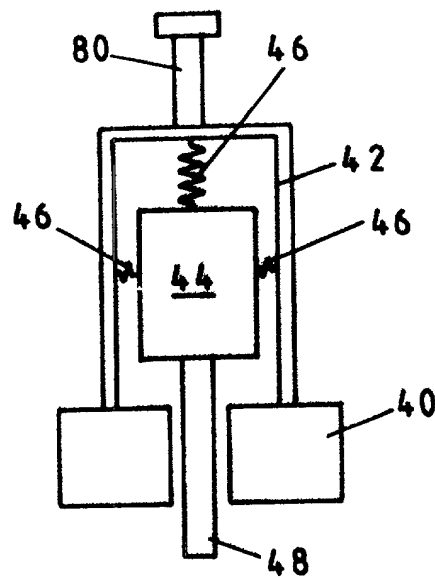
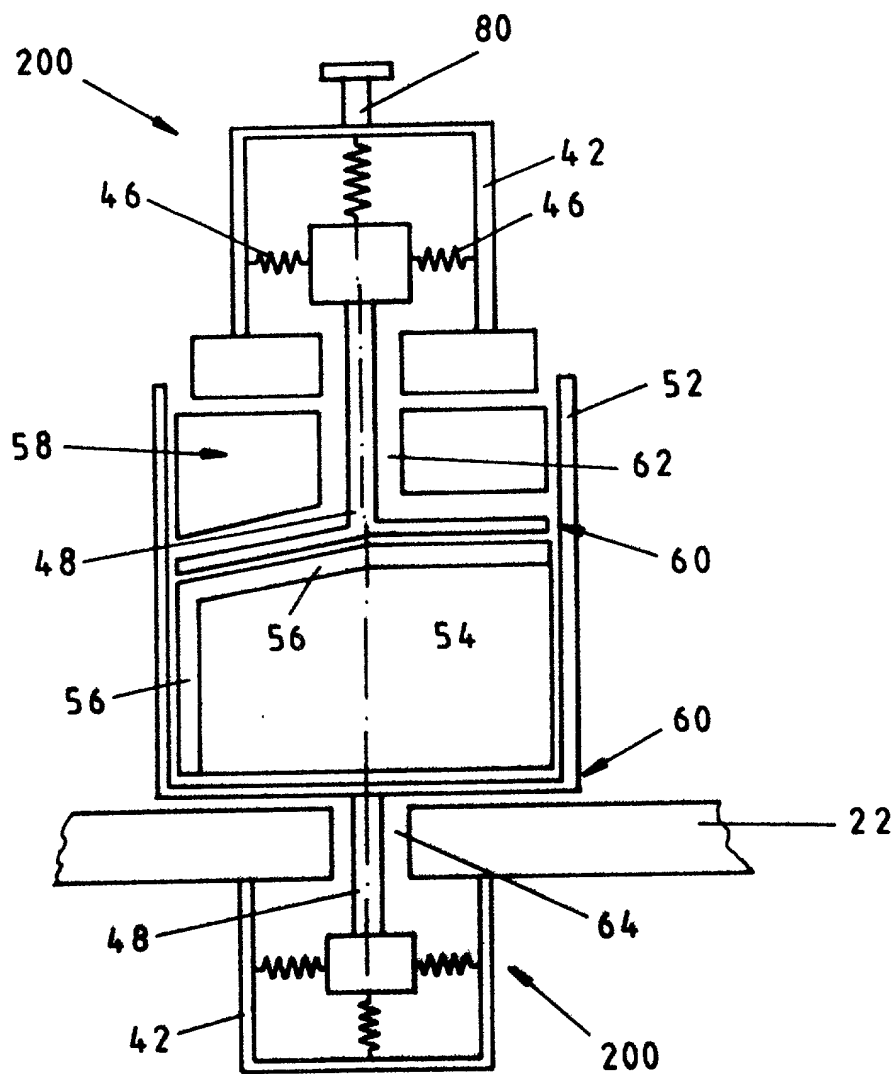
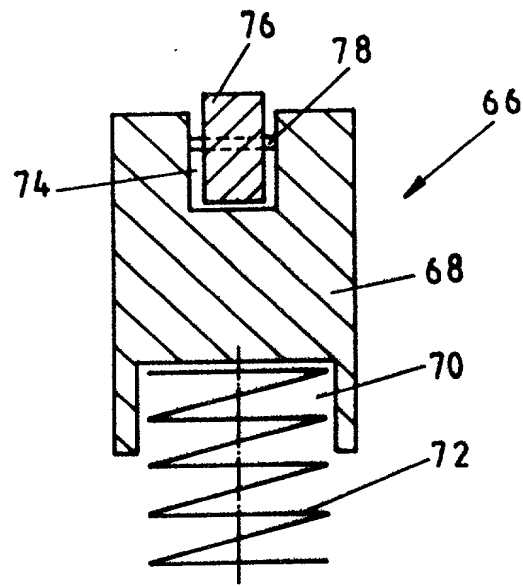


Fig. 5



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Fig. 6



## DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

### **DEVICE FOR PRODUCING CONCRETE BLOCKS**

the specification of which

(Check \_\_\_\_\_ is attached hereto.  
one)

  x   was filed on February 11, 1998

as Int'l. Application Serial No. PCT/IB98/00167

and was amended on \_\_\_\_\_ (if applicable)

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose to the U.S. Patent and Trademark Office all information known to be material to the patentability of this application in accordance with Title 37, Code of Federal Regulations, §§1.56 and 1.63(d).

I hereby claim foreign priority benefits under Title 35, United States Code, §119(a)-(d) of any foreign application(s) for patent or inventor's certificate listed below or §365 (a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below any foreign application for patent or inventor's certificate or of any PCT international application having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s)

Priority  
Claimed

<u>                    </u> (Number)	<u>                    </u> (Country)	<u>                    </u> (Day/Month/Year Filed)	<u>      </u> Yes <u>      </u> No
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I hereby claim the benefit under 35 U.S.C. §119(e) of any United States Provisional Application(s) listed below:

Priority  
Claimed

<u>                    </u> (Number)	<u>                    </u> (Filing Date)	<u>      </u> Yes <u>      </u> No
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I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) or §365(c) of any PCT international application designating the United States of America, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT international application in the manner

provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §§1.56 and 1.63(d) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:


PCT/IB98/00167  
(U.S./PCT Parent App No)

February 11, 1998  
(Parent Filing Date)

16 I hereby appoint Donald K. Huber, Registration No. 18,686; Theodore R. Paulding, Registration No. 19,294; John C. Hilton, Registration No. 22,965; Frederick J. Haesche, Registration No. 24,529; John C. Linderman, Registration No. 24,420; J. Kevin Grogan, Registration No. 31,961; Richard R. Michaud, Registration No. 40,088; Daniel G. Mackas, Registration No. 38,541; Peter J. Rainville, Registration No. 41,263; Marina F. Cunningham, Registration No. 38,419; Nicholas J. Tuccillo, Registration No. 44,322; Stephen P. Scuderi, Registration No. 42,136; Wm. Tucker Griffith, Registration No. 44,726; Michael T. Clorite, Registration No. 44,620; Mary-Jacq Holroyd, Registration No. 41,846; and Anthony D. Wilson, Registration No. 45,223; all of the firm of McCormick, Paulding & Huber LLP, CityPlace II, 185 Asylum Street, Hartford, Connecticut 06103-4102, telephone (860) 549-5290, as my attorneys to prosecute this application, to make alterations and amendments therein, to receive the patent and all correspondence relating to this application, and to transact all business in the U. S. Patent and Trademark Office connected therewith, and the said attorneys are hereby given full power of substitution and revocation.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

20 Turan Rodoslu  
Full name of sole or first  
inventor

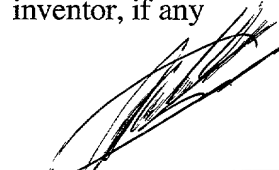
  
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